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United States Department of Agriculture
Bureau of Biological Survey

Wildlife Research and Management Leaflet BS-37

Washington, D. C. February 1936

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THE CORRELATION OF FORESTRY AND WILDLIFE MANAGEMENT *

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In attempting a brief discussion of the correlation of forestry and wildlife management, which can touch only a few of the more important factors, temporarily ignoring exceptions, may I emphasize that the discussion is in no way critical of foresters or forestry practices, but merely attempts to indicate a few points at which it seems possible to correlate the two functions for the greater good of wildlife.

Can forestry and wildlife management be correlated into an economically feasible program? It is certainly possible. How then can it be started? Several steps which can contribute to this end suggest themselves as worthy of consideration.

1. Some additions to the curriculum of the average forestry school.

2. Comparatively slight modifications of present forestry management practices to correlate them with the needs of wildlife.

3. Similar modifications in the viewpoint of and practices advocated by biologists and conservationists.

It has been my privilege to know intimately many foresters and visit many forests during the past twenty years. The average forester is well trained in his profession when he leaves school. He knows thoroughly the technical side of surveying, timber cruising, trail building, and the multitude of other activities which make up the routine of his profession, but comparatively few of them clearly conceive of a forest as an interrelated community of living organisms. This is no particular fault of theirs, as until recently few forestry schools have included anything more than very inadequate courses in biology and ecology in their curricula. During the last few years several schools have started courses under the general term of Game Management or Wildlife Management, but not many of them have been operating long enough to graduate students with a biological background.

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This development is still too new to affect very greatly the rank and file of forest personnel, but from the standpoint of wildlife it is a very encouraging program.

In discussing the second point, that concerning reasonable modification of present forestry practices, mention must be made of two important ideas which have been given increasing attention in recent years by the Federal Forest Service. Each one can be used constructively to aid the wildlife population of forest lands. These two are the idea of multiple use of forest lands, and the management of forests on a sustained yield basis.

The concept of multiple use has been growing slowly for years, encouraged partly, at least, by the increasing thousands of people who are using the forests for recreational purposes. This evolutionary development has encouraged those who could see in a forest something more than an area where it was possible to grow so many thousand board feet to the acre. Inevitably there will be conflicts of interests and ideas in the evolution of this program. Livestock men having grazing permits on western forests are especially apprehensive that increasing recreational use will limit the grazing allowed on these areas. This may be true to a certain extent, though no one can project long-time trends with complete confidence. In the end the highest and most profitable use of the lands will undoubtedly govern, and in many cases this undoubtedly means correlation of several uses rather than exclusive privileges held out and fostered for the benefit of any one group or interest. Under such a program wildlife will undoubtedly receive increasing consideration.

The program of management which calls for the harvesting of the forests on a sustained yield basis, which is the present policy on National as well as many State forests, will with some modification operate to provide automatically better environment for wildlife than now prevails on much of the timbered area.

To amplify this statement and show the value of a slight modification of the present program it is necessary to consider the needs of forest animals and birds.

Briefly, it may be said that the great majority of such species, particularly those regarded as game, are most abundant along the line where two different vegetative types meet. This fact is being recognized and given its proper significance by an increasing number of authorities in recent years.

Every hunter has long utilized the fact that in forest glades, along the trails, or in the edges of brush patches, he had his greatest chance of success, but few have appreciated its significance in a wildlife management plan.

In eastern hardwood forests and the heavy spruce, fir, or redwood forests of the west coast this fact is less obscured by other factors than in the yellow-pine forests of the Rockies or the open long-leafed pine forests of the south. In the first two types the wildlife is obviously concentrated along the trails and roads, the natural glades and openings, or about cut-over or burned-over areas. Here, where the forest canopy is broken, they find the greatest variety of vegetation to provide seeds, fruits, nuts, herbage, or browse. In addition they find more abundant and more varied cover than in the gloomy depths of the solid forests, where one may walk for miles without seeing a living thing.

In these mature forests where the canopy is complete, both food and cover are at a minimum and only those species may be found that are specially adapted to live in or on the dominant forest trees. Tree squirrels, chipmunks, woodpeckers, kinglets, chickadees, and similar forms are found most frequently, although even these are often more abundant near the edges of these solid forests than in their centers.

The same thing is true to a slightly less extent in the mixed hardwoods of the eastern States, though here the number of birds and animals found in the forest depths is somewhat greater, due to the greater diversity of trees which make up the stand.

For the sake of better illustrating the point, a cutting cycle on a given working circle handled on a sustained yield basis may be assumed to be 80 years. If this program should be followed, the area which has been cut over 20 years or less will be about 25 percent of the total. This 25 percent will furnish suitable environment (other things being equal) and favorable shelter and food conditions for most of the wildlife, particularly game species, to be found on the total unit, and the wildlife distribution over the entire area will be roughly governed by the distribution of this age class. Obviously, the more widely distributed these newly cut-over lands can be, the more uniform will be the distribution of wildlife and the more fully it will be able to utilize such food and cover resources as are available in the less favorable age classes.

In estimating carrying capacity for wildlife the percentage of the forest in this class and its distribution are all important. For example, a 100,000-acre unit might be rated not on the basis of 100,000 acres of forest but rather on the 25,000 acres of 1 to 20 year old forest which furnishes the real game habitat. The smaller amount of cover in the older age classes between 20 and 80 might well be considered as a reserve for utilization under extraordinary conditions, and carrying capacities calculated on the capacity of the main game range.

From this standpoint the 1,250 acres to be cut over in a given year would be of much greater value if distributed as 25 50-acre cuttings than one operation of 1,250. If such a program could be followed for 20 years, the result would be the building of a permanent maximum carrying capacity by distributing the valuable age classes throughout the entire 100,000 acres. Naturally there would be other complicating factors, which are being ignored in order to demonstrate clearly the basic importance of such a program.

Logging engineers and foresters will immediately raise the point that logging in 50-acre units is uneconomical and therefore impossible. The forestry management plan must of necessity consider this point, and if game management is to be a part of forestry the annual cut-over areas should be distributed in as small units as is economically possible considering the type of timber present and methods of logging employed. The growing use of truck-logging methods makes such a scheme more feasible than formerly, especially in second-growth forests. Large blocks of cut-over land, while valuable for wildlife, do not have as great a value as smaller units which produce more miles of forest edges. In addition there is a chance of over-producing some certain species where conditions particularly favor it. The deer herd on the Allegheny Forest seems to be a very good example of a combination of good law enforcement and exceptionally favorable food and cover conditions over a large block of land. Now that the forest is growing into a more advanced and unfavorable age class, an acute deer problem is created; despite a heavy hunting pressure, the game population remains above the constantly diminishing carrying capacity of the forest and creates a difficult management problem.

Another modification which might well be considered is a moderation of the planting program, especially in the eastern United States, where concentrated human population will probably demand increasing recreational use. Many of the present planting programs call for complete utilization of all Site 1 and Site 2 lands for coniferous plantings. Much land so classified consists of natural glades along or near water courses which are of importance to many forms of wildlife. If carried to its ultimate possible goal the present program may eliminate all of the open glades and forest edge vegetation which is of such value to many of the best species of wildlife.

With an ever increasing acreage reverting to forest types in the eastern half of the country and a constantly expanding use of wood substitutes - which is already causing concern to timberland owners - there is a growing possibility that by the time this timber reaches harvesting size it will face a glutted market. Forest planting is not only a doubtful long-time venture for private landowners, but the advisability of huge and all-inclusive planting operations by public agencies might well be questioned

On the other hand, not in many years have the game stocks exceeded the demand except in remote sections or in spots where legal obstacles prevented the full utilization of the supply. With a growing population and an increasing number of hunters, there seems little likelihood that it ever will. Under such conditions a restriction of a planting program which conceivably could cover every glade and other opening vital to the maintenance of game population might well be considered.

Comparatively small plantings of conifers are invaluable as game cover - large blocks are not so used except about the edges. They operate to reduce the food supply by restricting the variety and abundance of food-bearing plants.

A third modification of forest practice that might be suggested is in the timber stand improvement program, which has been greatly enlarged in the Eastern States by the development of C.C.C. camps and other forms of emergency labor which must be kept busy.

In the more recent work there is comparatively little to criticize, although in isolated spots operations still leave an adverse effect on wildlife. Such effects are more frequently noticed on State-owned forests than on National forests, due to the fact that State forests are smaller and more intensive work is necessary in order to keep the men employed in a season when there is often little choice of activity.

The entire philosophy of timber stand improvement, with its emphasis on the removal of "weed trees", may be, and by some conservationists is, considered as inimical to wildlife. If it were possible to put it into full operation, our forests might eventually be devoid of all fruit and nut-bearing trees and shrubs, and would consist solely of the two or three species which in the judgment of present administrative officers will have the highest timber value in the coming years.

There is some theoretical but little actual chance of this occurring, as such a program does not seem economically feasible under present practices of timber utilization, although there are spots in which it may approach maximum realization. Therefore the present danger to wildlife values is very much less than is feared by many individuals who are sincerely interested in wildlife.

In recent months areas have been seen where all beech has been girdled and felled to release other more "valuable trees" which, in one area, were nonexistent. On one tract all black cherry had been similarly treated, due to a misunderstanding on the part of the foreman, while on other sites dogwood, hickory, hawthorn, viburnum, wild crab, wild grape, and other valuable wildlife food plants have been destroyed.

On a few areas forest clean-up and timber stand improvement combined have resulted in complete destruction of both food and cover for wildlife. Such areas are small, and serve chiefly to demonstrate the necessity of careful definition of what is to be done before starting the work.

There is still another important factor. The forest land management agency should have either satisfactory working relationships with State game authorities or a direct voice in the handling of game species. If this is not provided for, it will not be possible to correlate wildlife populations with the carrying capacity of the land. It is already an acute problem in a number of widely scattered places, many of which are in the yellow pine forests of the West. Here a combination of good protection, adequate summer food and cover, and excessive utilization of winter ranges by game and livestock combined has created many serious situations. Even in this type of open forest, where the mature stands still carry a quantity of food plants, recognition of the transitory nature of good game land and development of utilization plans to provide a succession of cut-over lands in reasonably close proximity will eventually help, though not where snowfalls are so heavy as to drive deer and elk, the species most usually involved, entirely out of the forests during the winter months.

Neither will such a program help in present emergencies, where a drastic reduction in either game or livestock or both is often the only practical solution to the problem.

I have endeavored to point out several possible modifications of forestry practice which will make a correlation of forestry and game management feasible. Conversely, there are modifications which may well be made in the practices advocated by wildlife conservationists before they can be successfully applied under present-day forestry conditions. This should include a recognition that forest lands cannot be managed exclusively or even chiefly for the benefit of wildlife, but rather that wildlife values must be improved in correlation with other use of such lands.

Planting of wildlife food and cover plants as a general proposition is of doubtful economic feasibility on publicly owned forest lands. There are places where it can probably be justified, but the existing data do not point the way to its widespread use under present conditions. Such plantings should therefore be frankly experimental and limited in extent when done from the wildlife standpoint alone. Where erosion control by planting is necessary, consideration should be given to wildlife needs, and trees, shrubs, perennial plants, or grasses of value to wildlife utilized for this purpose. Herbaceous plants by introducing a new vegetative type may be especially desirable for wildlife, and at the same time serve admirably from an erosion control standpoint. Plant species of major importance for wildlife may also be encouraged on sites too poor to grow first-class timber. In other words, a timber stand improvement program which sacrifices timber trees on poor sites in favor of trees and shrubs having game value may be as justifiable economically as the reserve program.

Actual planting solely for wildlife on public lands should be carefully studied before being attempted on a large scale.

The concept of large forest refuge areas where wildlife will always be unmolested, unanalyzed, seems attractive, but it is not in accord with biological probabilities nor with experience.

For example, the deplorable Kaibab deer situation resulted from a combination of favorable environment and entire protection of the animals for a term of years. The Yellowstone's elk problems and those of several other areas are essentially the same - as the herd increases it automatically seals its doom by progressively destroying the available food plants.

These and many other examples are giving rise to a feeling that some modification of the refuge system is desirable. Such a modification should recognize the transitory nature of forest game ranges. It should take into account the fact the the earlier stages of forest growth provide the most favorable conditions, and that building up game stocks, particularly of deer and elk, to maximum carrying capacities during these favorable periods eventually will lead to destruction of available food supplies and ultimate starvation for many of the animals. Conservationists should frankly recognize this and realize that flexibility in the refuge idea so as to provide for utilization of surpluses is a requirement in the long-time program.

Several schemes have been proposed. Smaller refuges from which the surplus animals naturally drift into areas open to hunting work well under some conditions. In others the periodic opening of refuges to hunting has been proposed, under various sorts of regulations. Removal of a definite number of animals by the issuing of a limited number of licenses has sometimes worked well, and may be a solution to the problem in dealing with some species. Still another alternative might be a movable refuge, or series of refuges, fitted into the growth cycle so that game population could be built up as food supplies increased and harvested as the forest commenced to deteriorate as game range.

The impulse of both biologists and foresters when game management in forest lands is discussed is to place emphasis on what is not known and to outline immediately a program of intensive research on the problems of the particular territory under discussion. As a research worker I would be the last to object to such a program. There are and always will be a great many problems requiring research - probably many more than the available money and man power can solve. Every effort should be made to find more and more facts. In response to this commendable urge many elaborate and imposing programs of research have been drawn up in recent years, but few of them have been put into effect. Those individuals who are working are finding the road to definite knowledge both rough and long, and this is to be expected in dealing with the complex interrelationships that exist between the living plants and animals that comprise the forest community.

In the meantime, must the ultimate acquirement of all this knowledge be attained before a management program is started? Is it not possible to apply existing knowledge and modify practices and programs as more knowledge becomes available?

It is my belief that the distribution of the younger age classes throughout the forest areas is one of the fundamentals of any correlation of forestry and wildlife management. Why not put it into effect, so far as it can be fitted into the forestry program, and let it be creating more favorable wildlife environment while other problems are being worked out?

In this connection it might well be pointed out that no management plan, no matter how exhaustive the research on which it is based, can remain inflexible. Conditions are constantly changing, and these changes should be and can be utilized to the advantage of wildlife, even with existing knowledge.

In summarizing; it has been pointed out that on national forests, which comprise the largest area of good and potentially good wildlife habitat under one administrative control, policies are already in effect which can with slight modification be correlated with a sound wildlife management program.

These modifications are:

1. Distribution of cutting operations each year over the working circles as uniformly and in as small units as is economically feasible.

2. Reconsider planting programs to determine if it is advisable in the face of probable heavy recreational demand to plant all glades and natural openings valuable for wildlife to solid stands of conifers (of little value to wildlife when in large blocks).

3. Re-define timber stand improvement concept in order to prevent any unnecessary damage to wildlife values. (This is more needed on State than National forests.)

4. By some method give the land management agency a voice in management of game on lands under its administration.

5. Carefully scrutinize all programs for planting for wildlife to determine whether needed and economically feasible.

6. Study game refuges, particularly for big game animals, in the light of existing knowledge and new information constantly accumulating, and where necessary modify the refuge or refuge management to correspond with actual conditions.